AMENDMENTS TO THE CLAIMS:

The listing of claims shown below will replace all prior versions, and listings, of claims in the Application:

1. (Amended) A method for separating at least two particles, the particles having different ~~physical properties~~ dielectric constants, the method comprising the steps of:

applying a light source to create a light intensity pattern:

exposing the at least two particles to the light intensity pattern producing force on each particle;

moving the light intensity pattern with respect to the at least two particles causing the at least two particles to move with the light intensity pattern at velocities related to their respective ~~physical properties~~ dielectric constants, wherein each of the at least two particles moves at a different velocity causing the at least two particles to separate.

2. (Original) The method according to claim 1, wherein the step of applying a light source further comprises interfering at least two optical light beams.

3. (Original) The method according to claim 2 wherein the at least two optical light beams are coherent light beams.

4. (Original) The method according to claim 2 wherein the at least two optical light beams are incoherent light beams.

5. (Original) The method according to claim 2 further comprising splitting one optical light beam to create the at least two optical light beams.

6. (Original) The method according to claim 1 wherein the step of applying a light source further comprises using an optical mask to create the light intensity pattern.

7. (Original) The method according to claim 6 wherein the optical mask comprises an amplitude mask.

8. (Original) The method according to claim 6 wherein the optical mask comprises a phase mask.

9. (Original) The method according to claim 6 wherein the optical mask comprises a holographic mask.

10. (Original) The method according to claim 1 wherein the step of applying a light source further comprises periodically dimming and brightening a plurality of light sources to create the light intensity pattern.

11. (Original) The method according to claim 1 wherein the light intensity pattern comprises at least two peaks.

12. (Original) The method according to claim 1 wherein the light intensity pattern comprises at least two valleys.

13. (Original) The method according to claim 1 wherein the light intensity pattern is sinusoidal.

14. (Original) The method according to claim 1 wherein the light intensity pattern is periodic but not sinusoidal.

15. (Original) The method according to claim 1 wherein the light intensity pattern is constant in time.

16. (Original) The method according to claim 1 wherein the light intensity pattern varies in time.

17. (Original) The method according to claim 1 wherein the light intensity pattern is periodic and the period is optimized to create separation between the at least two particles.

18. (Cancelled)

19. (Cancelled)

20. (Original) The method according to claim 1 wherein the light intensity pattern is generated with coherent optical beams and the step of moving the light intensity pattern further comprises modulating the phase of the light beam(s).

21. (Original) The method according to claim 1 wherein the light intensity pattern is moved at a constant velocity.

22. (Amended) The method according to claim 1 further comprising optimizing velocity of the light intensity pattern to cause separation based on the ~~physical properties~~ <u>dielectric constants</u> of the at l ast two particles.

23. (Original) The method according to claim 1 further comprises after allowing the at least two particles to separate, altering velocity of the light intensity pattern with respect to the at least two particles causing further separation of the at least two particles.

24. (Original) The method according to claim 1 wherein the light source has a wavelength of between 0.3μm and 1.8 μm.

25. (Original) The method according to claim 24 wherein the wavelength is between 0.8μm and 1.8μm.

26. (Original) The method according to claim 25 wherein the wavelength is exactly or approximately 1.55μm.

27. (Original) The method according to claim 1 wherein at least one of the at least two particles have a resonant frequency and the light intensity pattern has a wavelength tuned to the resonate frequency of one of the at least two particles.

28. (Original) The method according to claim 1 wherein the light intensity pattern is two-dimensional.

29. (Original) The method according to claim 28 wherein the light intensity pattern has a period in each of the two dimensions and the period is different in each dimension.

30. (Original) The method according to claim 1 wherein the light intensity pattern is three-dimensional.

31. (Original) The method according to claim 30 wherein the light intensity pattern has a period in each of the three dimensions and the period is different in at least two of the dimensions.

32. (Original) The method according to claim 1 wherein the at least two particles are carried in a medium.

33. (Original) The method according to claim 32 wherein the medium is a fluidic medium.

34. (Original) The method according to claim 33 wherein the medium is non-guided.

35. (Original) The method according to claim 33 wherein the medium is guided.

36. (Amended) The method according to claim 35 wherein the <u>guided</u> medium includes fluidic channels.

37. (Original) The method according to claim 1 further comprising the step of superimposing a gradient onto the light intensity pattern.

38. (Original) The method according to claim 37 wherein the gradient is spatially constant.

39. (Original) The method according to claim 37 wherein the gradient is spatially varying.

40. (Original) The method according to claim 37 wherein the gradient is temperature.

41. (Original) The method according to claim 37 wherein the gradient is pH.

42. (Original) The method according to claim 37 wherein the gradient is viscosity.

43. (Original) The method according to claim 1 further comprising the step of superimposing an external force onto the light intensity pattern.

44. (Original) The method according to claim 43 wherein the force is constant.

45. (Original) The method according to claim 43 wherein the force is varying spatially and/or temporally.

46. (Original) The method according to claim 43 wherein the force is magnetic.

47. (Original) The method according to claim 43 wherein the force is electrical.

48. (Original) The method according to claim 43 wherein the force is gravitational.

49. (Original) The method according to claim 43 wherein the force is fluidic.

50. (Original) The method according to claim 43 wherein the force is frictional.

51. (Original) The method according to claim 46 wherein the force is electromagnetic.

52. (Original) The method according to claim 1 further comprising the step of monitoring separation of the at least two particles.

53. (Original) The method according to claim 52 further comprising providing feedback regarding particle separation.

Claims 54-78 (Cancelled)

79. (New) The method according to claim 1 wherein the particles are cells.

80. (New) The method of sorting particles in a branched microfluidic device comprising the steps of:

providing a device having a main channel, a first branch channel, and a second branch channel;

flowing a plurality of particles down the main channel;

superimposing a moving light intensity pattern on the device at a junction between the main channel, the first branch channel, and the second branch channel causing at least some of the plurality of particl s to be direct d into the first branch channel

and at least some of the plurality of particles to be directed into the second branch channel, wherein the sorting of the particles into the first branch channel and the second branch channel is based at least in part on the dielectric constants of the particles.

81. (New) The method of claim 80 wherein the particles are cells.

82. (New) The method of claim 80 wherein the main channel, the first branch channel, and the second branch channel intersect to form a T.

83. (New) The method of claim of claim 80 wherein particles having a dielectric constant below a threshold level are directed into the first branch channel and particles having a dielectric constant above a threshold level are directed to a second branch channel.

84. (New) The method of claim 80 comprising the additional step of further sorting the particles in one or both of the first branch channel and the second branch channel.

85. (New) The method of claim 80 further comprising the step of monitoring the separation of the particles into the first branch channel and the second branch channel.